National Aeronautics and Space Administration

Space Biosciences Research Branch

The principal mission of the Branch is to advance space exploration by achieving new scientific discoveries and technological developments in the biosciences. Relevant research and development objectives of the branch include radiation detection and biology, fundamental space biology, and the development of countermeasures to preserve human health in space. Teams of researchers are organized around scientific disciplines critical to NASA's biosciences missions.

Laboratories and Research

Microgravity and Space Radiation Effects on Skeletal Health
Research to define risks and mechanisms of skeletal tissue degeneration in space and to develop effective countermeasures if needed.

Radiation Detection Technologies and Biomarkers
Development of small active detectors for Moon, Mars, and beyond. Develop biomarker detection technologies focused on markers of individual susceptibility to radiation and other agents.

Effects of Stress Induced by Spaceflight Conditions
Ground-based & flight experiments using Drosophila, Volvox, yeast, and other biomodels to study the effect of spaceflight factors on microbial virulence, immunity, development and behavioral changes.

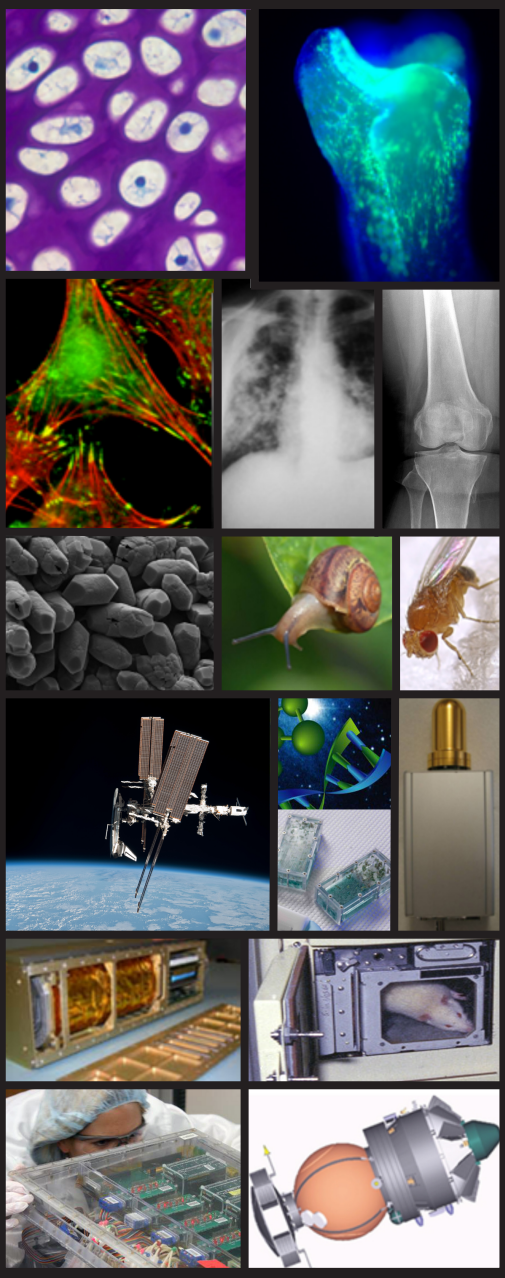
Gravity Effects on Cellular Regeneration
Both ground based and flight studies using stem cell and newt tail regeneration models of how gravity and the space environment affect stem cell health and regenerative potential.

Gravity Effects on Vestibular System
Both ground-based and flight studies using vertebrate and invertebrate experimental systems including collaborative spaceflight experiments with Russians.

Drug Stability in Space and Metabolic Countermeasures
Measurement and analysis of pharmaceutical stability and efficacy in space. Development of metabolic approaches to reduce cellular damage to radiation and other risk factors in space.

Toxicity of Lunar Dust
Investigating the health effects of lunar dust - respiratory, dermal and ocular.

State-of-the-art High-throughput Genomics
High-density gene array production and analysis are produced at NASA Ames. Bioinformatics research is performed using NASA Ames supercomputer resources.



NASA Ames Research Center

SPACE BIOSCIENCES

Visit our website at http://spacebiosciences.arc.nasa.gov

Sidney C. Sun, Chief, Space Biosciences Division
Debra A. Reiss-Bubenheim, Associate Chief, Space Biosciences Division
Jeffrey D. Smith, Chief, Space Biosciences Research Branch